

# **8210 - Acquisition ESOH Risk Management - How to Make It Work**

**NDIA Environment, Energy & Sustainability Symposium  
Acquisition Track  
Denver, CO**

**Robert E. Smith, CSP  
Booz Allen Hamilton**

**Sherman G. Forbes  
Office of the Deputy Assistant Secretary of the Air Force for Acquisition (SAF/AQ)**

**May 6, 2009**

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE <b>06 MAY 2009</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-2009 to 00-00-2009</b>	
4. TITLE AND SUBTITLE <b>Acquisition ESOH Risk Management -How to Make It Work</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Booz Allen Hamilton,1550 Crystal Drive, Suite 1100,Arlington,VA,22202-4158</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES <b>Presented at the NDIA Environment, Energy Security &amp; Sustainability (E2S2) Symposium &amp; Exhibition held 4-7 May 2009 in Denver, CO.</b>					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>14</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

# Contents

---

- Purpose
- Background
- Requirements and Guidance
- Common Elements of Unsuccessful ESOH RM Efforts
- Common Elements of Successful ESOH RM Efforts
- Conclusion

# Purpose

---

- To describe how the DoD Acquisition Environment, Safety, and Occupational Health (ESOH) Risk Management (RM) process can work most effectively as part of the Systems Engineering process
- To highlight common elements of unsuccessful and successful ESOH RM processes

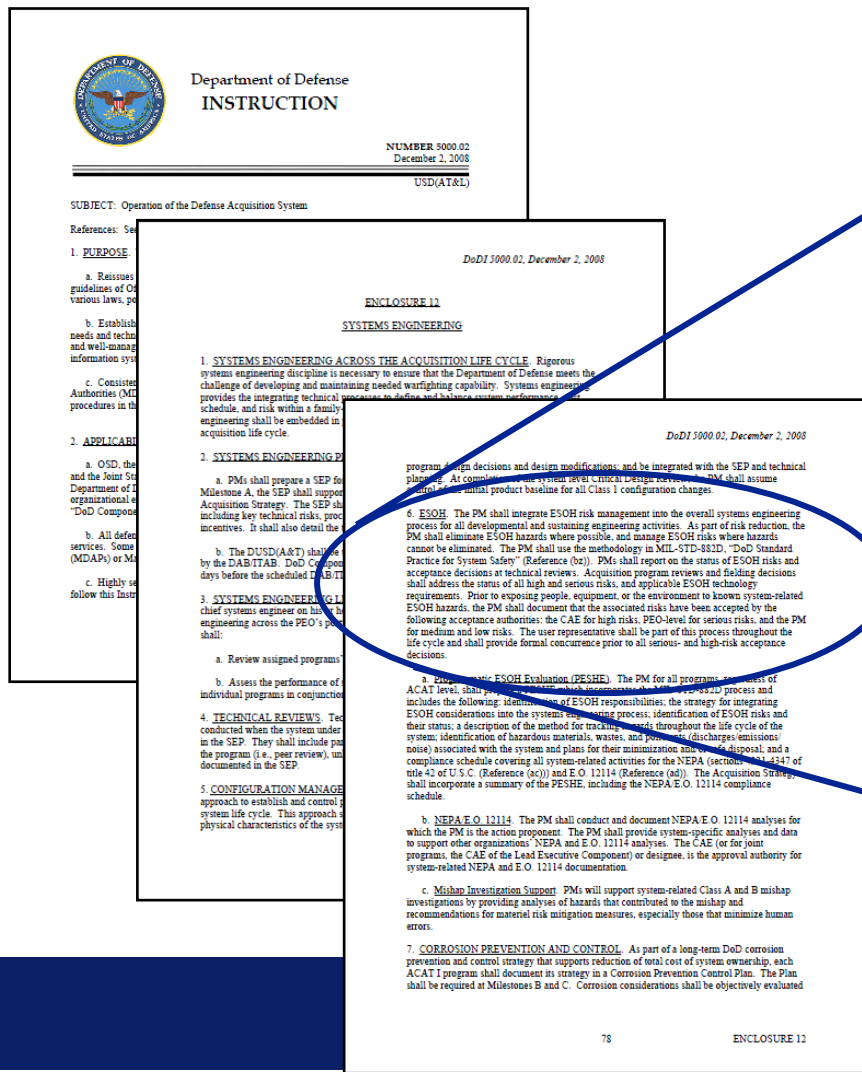
# Background

- Many DoD Acquisition Program Offices have tried and not been very successful at implementing effective and efficient ESOH RM efforts, while some Program Offices have implemented programs have been successful
- Based on lessons learned from multiple program office experiences, there are some common elements of unsuccessful and successful ESOH RM efforts



# Requirements

- DoD Instruction (DoDI) 5000.02 defines the basic requirements for Acquisition Program Office ESOH RM to be part of the overall Systems Engineering process



*The PM shall integrate ESOH risk management into the overall systems engineering process for all developmental and sustaining engineering activities. As part of risk reduction, the PM shall eliminate ESOH hazards where possible, and manage ESOH risks where hazards cannot be eliminated. The PM shall use the methodology in MIL-STD-882D, "DoD Standard Practice for System Safety".*

*DoDI 5000.02, Enclosure 12*

# USD(AT&L) Policy Memorandums Related to ESOH

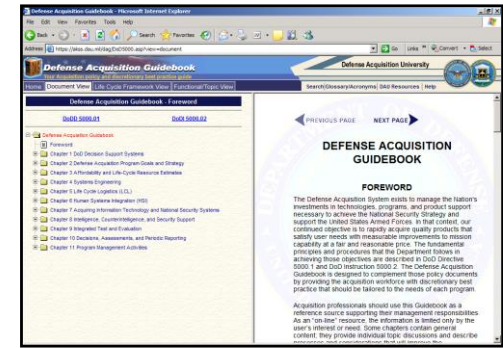
---

- Defense Acquisition System Safety, September 23, 2004
  - Use Standard Practice for System Safety, MIL-STD-882D to manage ESOH risk
  - Report ESOH risk status and acceptance decisions at technical and program reviews
- Reducing Preventable Accidents, November 21, 2006
  - Address status of each High and Serious ESOH risk and compliance with applicable safety technology requirements at all program reviews
- Defense Acquisition System Safety – ESOH Risk Acceptance, March 7, 2007
  - Formal acceptance of ESOH risks prior to exposing people, equipment, or the environment to a known system-related ESOH hazard
  - User Representative Formal Concurrence for High and Serious ESOH risks

***These basic requirements have been in place for several years***

## Guidance for ESOH / SE Integration

- DoD Defense Acquisition Guidebook (DAG)
  - Provides detailed guidance on how DoD expects Acquisition Program Offices to meet the ESOH RM requirements defined in DoDI 5000.02
  - [https://akss.dau.mil/dag/DoD5000.asp?view=document&f=GuideBook\IG\\_c4.4.11.asp](https://akss.dau.mil/dag/DoD5000.asp?view=document&f=GuideBook\IG_c4.4.11.asp)
- ESOH In Acquisition – Integrating ESOH into Systems Engineering
  - Depicts when ESOH activities should be performed to influence system design throughout SE process
- Acquisition Community Connection (ACC)
  - Provides best practices on how to integrate ESOH considerations into the systems engineering and acquisition processes
  - <https://acc.dau.mil/esoh>





# Common Elements of Unsuccessful ESOH RM Efforts

- Disconnect between ESOH Analysis and Design Activities
  - Difficult to implement ESOH recommendations for completed SE work products
  - ESOH recommendations will meet resistance and typically have limited success
  - Failure to follow through on recommendations and to work to viable mitigation solutions with Design Activities and the User Community
  - Failure of E, S, and OH Subject Matter Experts to work closely together with SE
    - » E, S, and OH provide conflicting program recommendations on same issues
    - » SSWG focused only on Safety; EWG focused only on Pollution Prevention
  - Failure to have E & OH Representatives as part of the ESOH effort
  - Trying to communicate a major design change to reduce ESOH risk at the wrong time could cost the program significant schedule and budget – obviously this will not be well-received



***Late ESOH Recommendations (if implemented) will probably impact a program by more than one day in schedule and \$36 in cost!***

## Common Elements of Unsuccessful ESOH RM Efforts (cont)

---

- ESOH Personnel are viewed by Management and Engineering as road blocks, not team members
- While the amount of resources applied to the ESOH RM efforts will have an impact on the quality of the outcomes, it is not the most critical factor
- Many large Acquisition Programs have allocated significant resources in terms of funding and personnel to ESOH RM leading to results of reducing ESOH risks on the system
  - Large programs can sometimes offset problems with additional resources
    - » For example, large programs have been doing a good job at Hazardous Materials Management
    - » However, utilizing substantial program funding for ESOH RM is not a sustainable approach

## Common Elements of Successful ESOH RM Efforts

---

- An ESOH RM effort has to be part of and be able to influence the day-to-day decision making that occurs in the Systems Engineering process
  - Direct line of communication to Systems Engineering, including Product/Engineering Integrated Product Team (IPTs)
  - Daily ESOH communication via IPT meetings, phonecons, test logs
  - Direct line of communication to test sites and/or end-users
  - E, S, and OH Subject Matter Experts work together to optimize recommendations across these functional areas
  - Implement ESOH in closed-loop tracking system to provide actions to Systems Engineering and other applicable IPTs
  - Provide informative and timely ESOH feedback to Systems Engineering
  - Integrate ESOH within Configuration Management Processes (ECR/ECP reviews, SE document reviews, PDR input, CDR input, etc.)
    - » Require ESOH review and approval for changes to be finalized

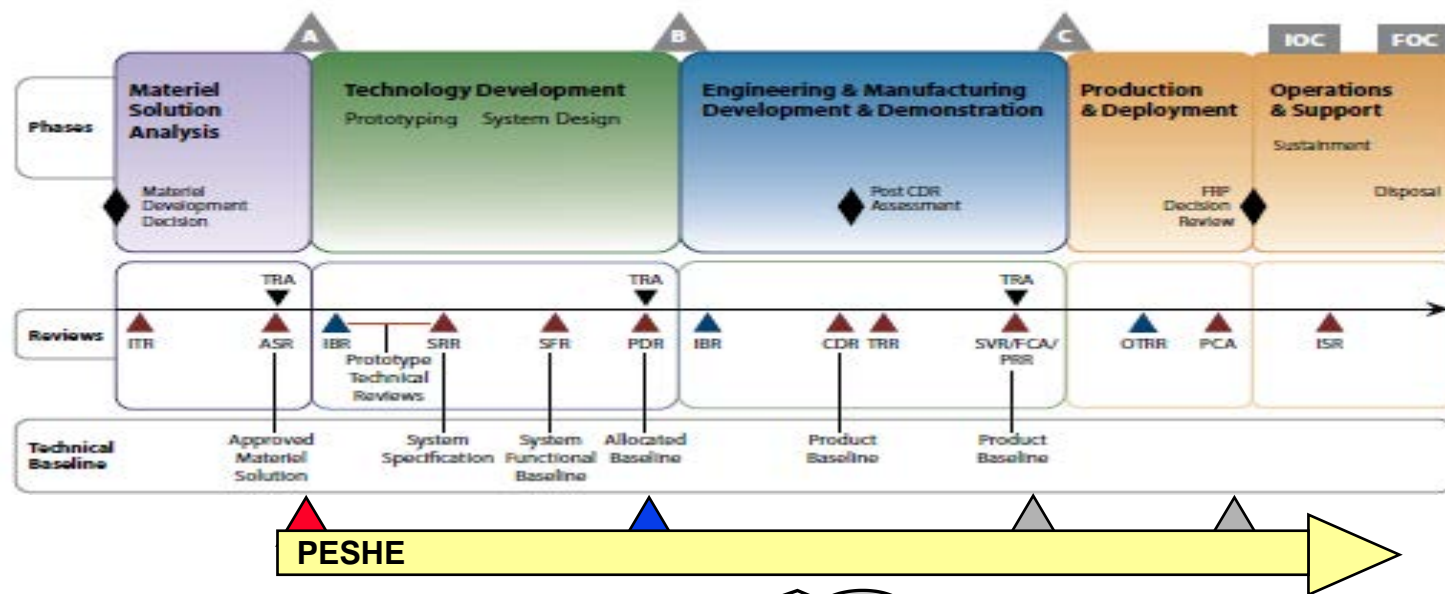
## Common Elements of Successful ESOH RM Efforts (cont)

---

- Program Manager and Chief Engineer are knowledgeable and understanding of ESOH efforts
  - PM and Chief Engineer views ESOH as team members and not as roadblocks
- The knowledge, skills, and abilities of the ESOH practitioners supporting a program can have a significant impact on the success of the Acquisition Program Office's ESOH RM efforts
  - ESOH practitioners need to be knowledgeable in their system, their system's operating environment, and also knowledgeable in applicable laws and regulations
- ESOH Professionals should have strong, in-depth knowledge of the ESOH risks AND potential mitigations
  - During IPT meetings and before/during design reviews, ESOH participation can provide expert feedback real-time to best influence design to reduce ESOH risk
  - During test site visits or end-user discussions, ESOH participation can receive real-time feedback on suggestions and/or concerns from those that work daily with the system to best influence design to reduce ESOH risk

# Common Elements of Successful ESOH RM Efforts (cont)

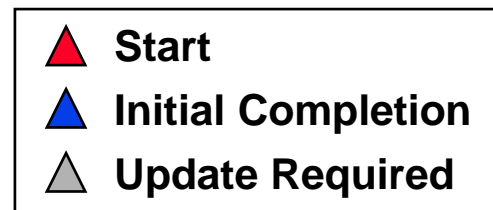
- Programmatic ESOH Evaluation (PESHE): A living document that guides and documents identification and management of ESOH risks.
  - The **ONLY** DoD-required ESOH document!
  - Successful PESHEs document what the programs plans to do or is doing, is consistent with where the program is in the life cycle, and **does not** just restate policy



Starts as a planning document



Becomes an ESOH Risk Management Status Report



## Conclusion

---

- If the ESOH team is removed from the Systems Engineering process, having a direct line to the Program Manager and/or having a large ESOH budget may not effectively influence design changes to mitigate ESOH risk
- If the ESOH RM efforts (resources and personnel) are a fully integrated part of the Systems Engineering team and efforts, then the likelihood of having a successful ESOH RM effort will be much higher than a better-resourced ESOH RM effort that is operating outside of the System Engineering process, even if it is reporting directly to the Program Manager
- Knowledgeable and experienced ESOH Professionals can effectively communicate ESOH risks and mitigations on a day-to-day basis within the Systems Engineering process to influence design changes and eliminate or reduce risk

---

# Questions?

**Robert E. Smith, CSP**  
**Booz Allen Hamilton**  
**1550 Crystal Drive, Suite 1100**  
**Arlington, VA 22202-4158**  
**703-412-7661**  
**smith\_bob@bah.com**